**CLAIMS:** I claim:

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1. An invention comprises of the following:
   - Windings on a stator and no windings on a rotor;
   - The rotor and the stator are salient pole;
   - The rotor pole width is about the stator pole width;
   - Each stator pole (a winding pole) is subdivided into plural stator teeth;
   - All windings of the plural stator teeth of each stator pole are connected together to be one phase winding;
   - The phase winding of each stator pole is excited to perform electromagnetic poles;
   - All odd stator teeth of each stator pole are either North poles or South poles;
   - All even stator teeth of each stator pole are either North poles or South poles;
   - The electromagnetic poles of the odd stator teeth and the even stator teeth are opposite;
   - Each stator tooth generates linking flux loops to both adjacent teeth to complete its electromagnetic flux loops;
   - The both adjacent teeth are a right-hand adjacent tooth and a left-hand adjacent tooth;
   - The electromagnetic flux loops of the stator tooth consist of a left-hand linking flux loop and a right-hand linking flux loop;
   - The left-hand linking flux loop is either a left or right rotation direction;
   - The right-hand linking flux loop is either a left or right rotation direction;
   - The left-hand linking flux loop of the odd stator teeth and the right-hand linking flux loop of the even stator teeth are the same rotation direction;
   - The right-hand linking flux loop of the odd teeth and the left-hand linking flux of the even teeth are the same rotation direction;
   - The linking flux loops are joined together as a series of flux loops (a series of circular flux loops);
   - The flux loop where a rotor pole-corner is aligned with the stator pole produces reluctance torque to rotate or move the rotor pole, then the next flux loop where the rotor pole-corner is increasingly aligned with the stator pole produces reluctance torque to continue rotate or move until the rotor pole is fully aligned with the stator pole;

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- Using both plural winding poles and plural phases perform a poly-phase machine that can be done by two combining types, (i) a non-overlap-pole type is done by placing the winding pole of the next phase next to the winding pole of the present phase in consideration of the both ends of the series of flux loops between phases at a pole joint must be the same rotation direction, and (ii) an overlap-pole type is done by overlapping the winding poles of plural phases in consideration of the series of flux loops where the plural phases are overlapped must be the same rotation direction.

2. An invention according to claim 1, by changing both the rotor to be the stator and the stator to be the rotor creates an invention which comprises of the following:
   - Windings on a rotor and no windings on a stator;
   - The rotor and the stator are salient pole;
   - The rotor pole width is about the stator pole width;
   - Each rotor pole (a winding pole) is subdivided into plural rotor teeth;
   - All windings of the plural rotor teeth of each rotor pole are connected together to be one phase winding;
   - The phase winding of each rotor pole is excited to perform electromagnetic poles;
   - All odd rotor teeth of each rotor pole are either North poles or South poles;
   - All even rotor teeth of each rotor pole are either North poles or South poles;
   - The electromagnetic poles of the odd rotor teeth and the even rotor teeth are opposite;
   - Each rotor tooth generates linking flux loops to both adjacent teeth to complete its electromagnetic flux loops;
   - The both adjacent teeth are a right-hand adjacent tooth and a left-hand adjacent tooth;
   - The electromagnetic flux loops of the rotor tooth consist of a left-hand linking flux loop and a right-hand linking flux loop;
   - The left-hand linking flux loop is either a left or right rotation direction;
   - The right-hand linking flux loop is either a left or right rotation direction;
   - The left-hand linking flux loop of the odd rotor teeth and the right-hand linking flux loop of the even rotor teeth are the same rotation direction;

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- The right-hand linking flux loop of the odd rotor teeth and the left-hand linking flux of the even rotor teeth are the same rotation direction;
- The linking flux loops are joined together as a series of flux loops (a series of circular flux loops);
- The flux loop where a stator pole-corner is aligned with the rotor pole produces reluctance torque to rotate or move the rotor pole, then the next flux loop where the stator pole-corner is increasingly aligned with the rotor pole produces reluctance torque to continue rotate or move until the stator pole is fully aligned with the rotor pole;
- Using both plural winding poles and plural phases perform a poly-phase machine that can be done by two combining types, (i) a non-overlap-pole type is done by placing the winding pole of the next phase next to the winding pole of the present phase in consideration of the both ends of the series of flux loops between phases at a pole joint must be the same rotation direction, and (ii) an overlap-pole type is done by overlapping the winding poles of plural phases in consideration of the series of flux loops where the plural phases are overlapped must be the same rotation direction.

3. An invention according to claim 1 wherein said "all windings of the plural stator teeth of each stator pole" and claim 2 wherein said "all windings of the plural rotor teeth of each rotor pole", the windings are connected together to be one phase winding in consideration of every winding in each slot is driven by current inversely direction to each other adjacent.

4. An invention according to claim 1 wherein said "all windings of the plural stator teeth of each stator pole" and claim 2 wherein said "all windings of the plural rotor teeth of each rotor pole", the windings are all connected in either series or parallel to be one phase winding and can be wound by three ways:
   - The phase winding, every tooth is wound inversely direction to each other adjacent;
   - The phase winding, only the odd teeth are wound and wound in the same direction;
   - The phase winding, only the even teeth are wound and wound in the same direction.

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5. An electrical machine according to claim 1 wherein said "the plural stator teeth", can be replaced with an invisible teeth to be a toothless-stator machine by the invention technique:
   - The invention can work without the stator tooth on the stator pole but the rotor pole have to be very close to the toothless-stator pole;
   - The winding space on the stator is still necessary to perform as the invisible tooth for flux travelling between the stator pole and the rotor pole.

6. An electrical machine according to claim 2 wherein said "the plural rotor teeth", can be replace with an invisible teeth to be a toothless-rotor machine by the invention technique:
   - The invention can work without the rotor tooth on the rotor pole but the stator pole have to be very close to the toothless-rotor pole;
   - The winding space on a rotor is still necessary to perform as the invisible tooth for flux travelling between the stator pole and the rotor pole.

7. An electrical machine according to claim 1, a poly-phase machine of the invention by the non-overlap-pole type as Direct Current pulse machine,
   The invention by this type can be either odd or even number of rotor poles, for examples 2 poles, 3 poles, 4 poles, 5 pole, 6 poles, 7 poles, 8 poles, 9 poles, 10 poles, 11 poles, 12 poles, etc, and can be designed by the following steps:

   - Declare a number of rotor poles;
   - Declare a number of stator teeth;
   - In case of, a number of stator teeth per pole is even number the invention configuration can be either an even or odd number of the rotor poles;
   - In case of, a number of stator teeth per pole is odd number the invention configuration can only be an even rotor pole number and every winding pole has to invert the phase winding to each other adjacent to eliminate cancellation of the series of flux loops, for example the phase windings in 3-phase 2-pole are (+A), (-B), (+C), (-A), (+B) and (–C), respectively;
   - Declare a number of phases;
   - A total number of stator poles = [a number of rotor poles] * [a number of phases];

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- A total number of stator teeth = [a total number of stator poles] * [a number of stator teeth per pole];
- Minimum number of teeth per pole for the non-overlap-pole type are two teeth to generate a one short flux loop between teeth and two short flux loops at the both ends of the series of flux loops;
- To get the benefit over the invention of a low torque ripple should declare a high number of stator teeth per pole with optimising a practical winding;
- A stroke angle of the invention = 360 / {[2/3]*[A total number of stator poles]};
- A number of windings depend on a selected way of the invention winding and a number of stator teeth per pole;
- The invention has varieties of configurations, the examples of configurations that the invention can apply to are,
  - A 2-pole 3-phase motor with stroke angle 60°,
  - A 3-pole 3-phase motor with stroke angle 40°,
  - A 4-pole 3-phase motor with stroke angle 30°,
  - A 5-pole 3-phase motor with stroke angle 24°,
  - A 6-pole 3-phase motor with stroke angle 20°,
  - A 7-pole 3-phase motor with stroke angle 17.14°,
  - A 8-pole 3-phase motor with stroke angle15°,
  - A 9-pole 3-phase motor with stroke angle 13.33°,
  - A 10-pole 3-phase motor with stroke angle 12°,
  - A 11-pole 3-phase motor with stroke angle 10.09°,
  - A 12-pole 3-phase motor with stroke angle10°,
  - Etc.

8. An electrical machine according to claim 1, a poly-phase machine of the invention by the overlap-pole type as Direct Current pulse machine,
   The invention by this configuration can be any odd or even number of rotor poles, for examples 2 poles, 3 poles, 4 poles, 5 poles, 6 poles, 7 poles, 8 poles, 9 poles, 10 poles, 11 poles, 12 poles, etc, and can be designed by the following steps:

- Declare a number of rotor poles;
- Declare a number of phases;

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- A total number of stator poles = [a number of rotor poles] * [a number of phases];
- Declare a number of stator teeth per pole;
- A number of stator teeth per pole must be in accordance with the overlapping ratio (in 3 phase is 1/3 of pole width, in 4 phase is 1/4of pole width, in 5 phase is 1/5 of pole width, etc);
- The result of a number of stator teeth per pole divided by a number of phases should be an integer;
- Minimum teeth per pole for a 3-phase overlap-pole type are 3 teeth to have 1/3 overlapping among 3 phases, a 4-phase overlap-pole type are 4 teeth to have 1/4 overlapping among 4 phases, etc;
- In 3 phases, the number of stator teeth per pole can be any integer number that is multiplied with 3, for examples 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 33, 36, 39, 42, etc;
- In 4 phases, the number of stator teeth per pole can be any integer number that is multiplied with 4, for examples 4, 8, 12, 16, 20, 24, 28, 32, 36, 40, etc;
- To get a benefit over the invention of a low torque ripple should declare a high number of stator teeth per pole with optimising a practical winding;
- A total number of stator teeth = [2/3]*[A total number of stator poles] * [a number of stator teeth per pole];
- A stroke angle of the invention = 360 / {[2/3]*[A total number of stator poles]};
- A number of windings depend on a selected way of the invention windings and a number of stator teeth per pole;
- The invention has varieties of configurations, the examples of configurations that the invention can apply to are,
  - A 2-pole 3-phase motor with stroke angle 90°,
  - A 3-pole 3-phase motor with stroke angle 60°,
  - A 4-pole 3-phase motor with stroke angle 45°,
  - A 5-pole 3-phase motor with stroke angle 36°,
  - A 6-pole 3-phase motor with stroke angle 30°,
  - A 7-pole 3-phase motor with stroke angle 25.71°,
  - A 8-pole 3-phase with stroke angle 22.5°,
  - A 9-pole 3-phase with stroke angle 20°,

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- A 10-pole 3-phase with stroke angle18°,
- A 11-pole 3-phase with stroke angle16.36°,
- A 12-pole 3-phase with stroke angle15°,
- Etc.

9. An electrical machine according to claim 1, a poly-phase machine of the invention by the overlap-pole type as Alternating Current machine,
   The invention by this configuration can be only an even number of poles of a rotor, for examples 2 poles, 4 poles, 6 poles, 8 poles, 10 poles, 12 poles, etc, and can be designed by the following steps:

   - Declare a number of poles of a rotor (only an even number of poles);
   - Declare a number of phases;
   - A total number of stator poles = [a number of rotor poles] * [a number of phases];
   - Declare a number of stator teeth per pole;
   - A number of stator teeth per pole must be in accordance with the overlapping ratio (in 3 phase is 1/3 of pole width, in 4 phase is 1/4of pole width, in 5 phase is 1/5 of pole width, etc);
   - A result of a number of stator teeth per pole divided by a number of phases should be an integer;
   - Minimum teeth per pole for a 3-phase overlap-pole type are 3 teeth to have 1/3 overlapping among 3 phases, a 4-phase overlap-pole type are 4 teeth to have 1/4 overlapping among 4 phases, etc;
   - In 3 phases, the number of stator teeth per pole can be any integer number that is multiplied with 3, for examples 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 33, 36, 39, 42, etc;
   - In 4 phases, the number of stator teeth per pole can be any integer number that is multiplied with 4, for examples 4, 8, 12, 16, 20, 24, 28, 32, 36, 40, etc;
   - To get a benefit over the invention of a low torque ripple should declare a high number of stator teeth per pole with optimising a practical winding;
   - A total number of stator teeth = [2/3]*[A total number of stator poles] * [a number of stator teeth per pole];

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- A stroke angle of the invention = 360 / {[2/3]*[A total number of stator poles]};
- A number of windings depend on a selected way of an invention winding and a number of stator teeth per pole;
- The invention in the overlap-pole type of AC motor, every winding pole has to invert the phase winding to each other adjacent to generate the series of flux loops rotation direction in accordance with alternating current to eliminate cancellation of the series of flux loops, for example phase windings in 3-phase 2-pole are (+A), (-B), (+C), (-A), (+B) and (–C), respectively;
- The invention has varieties of configurations, the examples of configurations that the invention can apply to are,
    - A 2-pole 3-phase motor with stroke angle 90°,
    - A 4-pole 3-phase motor with stroke angle 45°,
    - A 6-pole 3-phase motor with stroke angle 30°,
    - A 8-pole 3-phase with stroke angle 22.5°,
    - A 10-pole 3-phase with stroke angle18°,
    - A 12-pole 3-phase with stroke angle15°,
    - Etc.

10. An electrical machine according to claim 2 wherein said "windings on a rotor and no windings on a stator" and wherein said "a poly-phase machine", by using invention method of claim 7 and claim 8 and claim 9 creates a poly-phase electrical machine that windings on the rotor and no windings on the stator.

11. A linear motor unfolds from the invention of claim 7, claim 8, claim 9 and claim 10.

12. An invention according to claim 1 wherein said "Each stator tooth generates linking flux loops to both adjacent teeth to complete their electromagnetic flux loops", means flux loops travel only between the both adjacent teeth therefore the rotor core can be improved by the following methods:
    - The rotor core can be replaced with a light weight material to be a lightweight rotor;
    - The rotor core can be hollowed out to be a lightweight rotor.

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